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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,546	11/28/2001	Sangeeta Ramakrishnan	CISCP232/3865	5889

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EXAMINER	
SHAH, CHIRAG G	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 01/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/998,546	RAMAKRISHNAN ET AL.	
	Examiner	Art Unit	
	Chirag G. Shah	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 23-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1-9 and 14-15 rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al. (U.S. Pub. No. 2005/0041689), hereinafter Wu.

Regarding claim 1, Wu discloses of an apparatus **[transcoder 100, see fig. 1]** generating one or more evaluation metrics **[obtaining statistical information, see claim 1, lines 8-13]** associated with the performance of a statistical remultiplexer **[the statistical information is associated with the statistical remultiplexer 120 of fig. 1 and claim 1, lines 1-3]** the apparatus comprising:

at least one input for receiving at least a portion of first data **[video data, see abstract, fig. 1 and paragraphs 0076-0077]** associated with the performance of a statistical remultiplexer **[input transports streams, a number of channels that include video data, see fig. 1, abstract and claim 1]**;

logic for generating second data associated with the performance of the statistical remultiplexer **[the logical elements of fig. 1 determine the respective bit rate for every incoming video channel for each interval and generate a second data by transcoding the**

respective video frames in accordance with the respective bit rate need parameters following the delaying, see claim 1, lines 8-13 and see paragraph 0097 and fig. 4] , wherein the second data is an evaluation metric generated using at least a portion of the first data **[the transcoding to generate the second data by a one-frame delay uses first data of the respective incoming video frames, see claim 1 and paragraph 0097]**, the second data providing a quantitative measure of the performance of the statistical remultiplexer **[the second data provides a measure of bit rate parameter, see claims 1 and 3 and paragraphs 0078 and 0081]**;

at least one output for outputting the second data **[output transport stream, fig. 1]**.

Regarding claim 2, Wu discloses wherein the second data is an evaluation metric associated with at least one of amount of bit rate reduction, change in video quality, wasted output bandwidth, decoder buffer model data level, bit rate reduction characteristics, and time delay [as disclosed in paragraphs 0078 and 0081 of computing the transcoding bit rate for every video channel for each interval and further discloses in claims 1-2 of generating video frames in accordance with the respective bit rates need parameters following the time delay, thus providing a metric associated with an amount of bit rate reduction and/or time delay amount from first data to generation of second data].

Regarding claim 3, Wu discloses wherein the apparatus is integrated into a statistical remultiplexer [see fig. 1, where the transcoder apparatus is integrated into a statistical remultiplexer 120].

Regarding claim 4, Wu discloses wherein the apparatus (transcoder of fig. 1) is separate from and connectable to a statistical remultiplexer (statistical remultiplexer 120 of fig. 1).

Regarding claim 5, Wu discloses in fig. 1 of a method for generating one or more evaluation metrics **[obtaining statistical information, see claim 1, lines 8-13]** associated with the performance of a statistical remultiplexer **[the statistical information is associated with the statistical remultiplexer 120 of fig. 1 and claim 1, lines 1-3]** the method comprising:

obtaining input data**[compressed video data, see abstract, fig. 1 and paragraphs 0076-0077]** associated with at least a portion of one or more input compressed bit streams input to a statistical remultiplexer **[input transports streams, a number of channels that include video data, see fig. 1, abstract and claim 1]**;

obtaining output data associated with at least a portion of an output compressed bit stream output from the statistical remultiplexer **[the logical elements of fig. 1 determine the respective bit rate for every incoming video channel for each interval and generate a second data by transcoding the respective video frames in accordance with the respective bit rate need parameters following the delaying, see claim 1, lines 8-13 and see paragraph 0097 and fig. 4]**; and

generating an evaluation metric utilizing the input data and the output data, the evaluation providing a quantitative measure of the performance of the statistical remultiplexer **[the transcoding to generate the second data by a one-frame delay uses first data of the respective incoming video frames, see claim 1 and paragraph 0097; the second data**

provides a quantitative measure of bit rate parameter, see claims 1 and 3 and paragraphs 0078 and 0081].

Regarding claim 6, Wu discloses wherein obtaining input data comprises determining one or more input bit rates of at least a portion of the one or more input compressed bit streams[input transports streams, a number of channels that include video data, see fig. 1, abstract and claim 1], obtaining output data comprises determining an output bit rate of the portion of the output compressed bit stream [the logical elements of fig. 1 determine the respective bit rate for every incoming video channel for each interval and generate a second data by transcoding the respective video frames in accordance with the respective bit rate need parameters following the delaying, see claim 1, lines 8-13 and see paragraph 0097 and fig. 4], and generating the evaluation metric comprises determining the amount of bit rate reduction performed by the statistical remultiplexer utilizing the input bit rates and the output bit rate [the transcoding to generate the second data by a one-frame delay uses first data of the respective incoming video frames, see claim 1 and paragraph 0097; the second data provides a quantitative measure of bit rate parameter, see claims 1 and 3 and paragraphs 0078 and 0081].

Regarding claim 7, Wu discloses wherein the input bit rates of the one or more input compressed bit streams do not include a bit rate attributable to filler packets present in the portion of the one or more input compressed bit stream(s), and wherein the output compressed bit rate does not include a bit rate attributable to filler packets [Wu does not mention of the input compressed bit data of figure 4 including a bit rate attributable to filler packets].

Regarding claim 9, Wu discloses in fig. 1 and paragraphs 0078 and 0081 wherein the evaluation metric is generated by an evaluator.

Regarding claim 14, Wu discloses wherein the evaluation metric indicates at least one of an amount of bit rate reduction performed, number of frames subjected to bit rate reduction, and number of bits reduced per frame [as disclosed in paragraphs 0078 and 0081 of computing the transcoding bit rate for every video channel for each interval and further discloses in claims 1-2 of generating video frames in accordance with the respective bit rates need parameters following the time delay, thus providing a metric associated with an amount of bit rate reduction and/or time delay amount from first data to generation of second data].

Regarding claim 8, Wu discloses in paragraph 0081, fig. 2 and 3 of bit rate reduction through a simplified transcoder architecture. Wu does not specifically state wherein the amount of bit rate reduction is a percentage of bit rate reduction. However, Wu clearly discloses in claim 1 of determining the respective bit rate needed following the delaying thereof upon recovering and storing incoming video frames. Since the initial input bit rate is known, and based on claim 1, the transcoded bit rate is determined following a delay. It is inherent knowledge with respect to the percentage of bit rate reduction having known the input bit rate and transcoded bit values.

Regarding claim 15, Wu discloses in combination with paragraphs 0078-0081 and claim 1 wherein the input data and the output data are obtained for one or more frames input to a data reduction process over a specified time period and wherein the evaluation metric is an average value over the specified time period.

Regarding claim 23, Wu discloses in fig. 1 of a method for generating one or more evaluation metrics [**obtaining statistical information, see claim 1, lines 8-13**] associated with the performance of a statistical remultiplexer [**the statistical information is associated with the statistical remultiplexer 120 of fig. 1 and claim 1, lines 1-3**] the method comprising:

inputting one or more types of data associated with the performance of a statistical remultiplexer to an evaluator [**input transports streams, a number of channels that include video data, see fig. 1, abstract and claim 1**];

generating at the evaluator one or more evaluation metrics associated with the performance of the statistical remultiplexer [**the logical elements of fig. 1 determine the respective bit rate for every incoming video channel for each interval and generate a second data by transcoding the respective video frames in accordance with the respective bit rate need parameters following the delaying, see claim 1, lines 8-13 and see paragraph 0097 and fig. 4; the second data provides a measure of bit rate parameter, see claims 1 and 3 and paragraphs 0078 and 0081**] utilizing at least a portion of the one or more types of data input to the evaluator[**the transcoding to generate the second data by a one-frame delay uses first data of the respective incoming video frames, see claim 1 and paragraph 0097**]; and

outputting the one or more evaluation metrics from the evaluator [**output transport stream, fig. 1 and 0078 and 0081**].

Regarding claim 24, Wu discloses in fig. 1 and paragraph 0076 wherein the one or more types of data comprise at least one of video and audio data.

Regarding claim 25, Wu discloses wherein the one or more evaluation metrics generated by the evaluator are associated with at least one of amount of bit rate reduction performed by the statistical remultiplexer, change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer [as disclosed in paragraphs 0078 and 0081 of computing the transcoding bit rate for every video channel for each interval and further discloses in claims 1-2 of generating video frames in accordance with the respective bit rates need parameters following the time delay, thus providing a metric associated with an amount of bit rate reduction and/or time delay amount from first data to generation of second data].

Regarding claim 26, Wu discloses of a device **[transcoder 100, see fig. 1]** generating one or more evaluation metrics [**obtaining statistical information, see claim 1, lines 8-13]** associated with the performance of a statistical remultiplexer **[the statistical information is associated with the statistical remultiplexer 120 of fig. 1 and claim 1, lines 1-3]** the apparatus comprising:

means **[one input of fig. 1]** for receiving at least a portion of first data **[video data, see abstract, fig. 1 and paragraphs 0076-0077]** associated with the performance of a statistical remultiplexer **[input transports streams, a number of channels that include video data, see fig. 1, abstract and claim 1]**;

means **[logic of fig. 1]** for generating second data associated with the performance of the statistical remultiplexer **[the logical elements of fig. 1 determine the respective bit rate for every incoming video channel for each interval and generate a second data by transcoding the respective video frames in accordance with the respective bit rate need parameters following the delaying, see claim 1, lines 8-13 and see paragraph 0097 and fig. 4]** , wherein the second data is an evaluation metric generated using at least a portion of the first data **[the transcoding to generate the second data by a one-frame delay uses first data of the respective incoming video frames, see claim 1 and paragraph 0097]**, the second data providing a quantitative measure of the performance of the statistical remultiplexer **[the second data provides a measure of bit rate parameter, see claims 1 and 3 and paragraphs 0078 and 0081]**;

means **[at least one output steam of fig. 1]** for outputting the second data **[output transport stream, fig. 1]**.

Regarding claim 27, Wu discloses wherein the evaluation metric is associated with at least one of amount of bit rate reduction performed by the statistical remultiplexer, change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer [as disclosed in paragraphs 0078 of computing the transcoding bit rate for every video channel for each interval and further discloses in claims 1-2 of generating video frames in accordance with the respective bit rates nee parameters following the time delay, thus providing a metric associated

with an amount of bit rate reduction and/or time delay amount from first data to generation of second data];

Regarding claim 28, Wu discloses in fig. 1 of a computer readable medium (transcoder in fig. 1) containing executable computer program instructions which when executed by a digital processing system cause the system to perform a method for generating an evaluation metric associated with the performance of a statistical remultiplexer, the method comprising:

obtaining one or more types of data associated with the performance of a statistical remultiplexer **[input transports streams, a number of channels that include video data, see fig. 1, abstract and claim 1]**;

generating one or more evaluation metrics associated with the performance of the statistical remultiplexer **[the logical elements of fig. 1 determine the respective bit rate for every incoming video channel for each interval and generate a second data by transcoding the respective video frames in accordance with the respective bit rate need parameters following the delaying, see claim 1, lines 8-13 and see paragraph 0097 and fig. 4; the second data provides a measure of bit rate parameter, see claims 1 and 3 and paragraphs 0078 and 0081]** utilizing at least a portion of the one or more types of data **[the transcoding to generate the second data by a one-frame delay uses first data of the respective incoming video frames, see claim 1 and paragraph 0097]**; and

outputting the one or more evaluation metrics **[output transport stream, fig. 1 and 0078 and 0081]**.

Regarding claim 29, Wu discloses wherein the evaluation metric is associated with at least one of amount of bit rate reduction performed by the statistical remultiplexer, change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer [as disclosed in paragraphs 0078 and 0081 of computing the transcoding bit rate for every video channel for each interval and further discloses in claims 1-2 of generating video frames in accordance with the respective bit rates need parameters following the time delay, thus providing a metric associated with an amount of bit rate reduction and/or time delay amount from first data to generation of second data].

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 10-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Lin et al. (U.S. Pub. 2003/0081676 A1), hereinafter Lin.

Regarding claim 10, Wu discloses obtaining input data[compressed video data, see abstract, fig. 1 and paragraphs 0076-0077] associated with at least a portion of one or more input compressed bit streams input to a statistical remultiplexer [input transports streams, a number of channels that include video data, see fig. 1, abstract and claim 1];

obtaining output data associated with at least a portion of an output compressed bit stream output from the statistical remultiplexer [the logical elements of fig. 1 determine the respective bit rate for every incoming video channel for each interval and generate a second data by transcoding the respective video frames in accordance with the respective bit rate need parameters following the delaying, see claim 1, lines 8-13 and see paragraph 0097 and fig. 4]; and

generating an evaluation metric utilizing the input data and the output data, the evaluation providing a quantitative measure of the performance of the statistical remultiplexer [the transcoding to generate the second data by a one-frame delay uses first data of the respective incoming video frames, see claim 1 and paragraph 0097; the second data provides a quantitative measure of bit rate parameter, see claims 1 and 3 and paragraphs 0078 and 0081].

Wu fails to explicitly disclose wherein generating an evaluation metric comprises determining a difference in video quality between the input video quality and the output video quality. Lin discloses in claim 1 and paragraph 0022-0023, Fig. 8A and 8B of a video transcoding (remultiplexing). The input unit receives a video bit-stream encoded by motion compensation based on the frame. The DCT-domain motion compensation unit re-calculates first DCT coefficients for a target block in the inter-frame included in the video bit-stream received, and an output unit is configured to transmit transcoded video bit-stream, where the motion compensation calculates the difference in video quality of the input pixel block and output target video quality. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Wu to generate a evaluation metric for enabling a difference in video quality between the input and the output video quality as

taught by Lin. One is motivated as such in order to provide a difference and prediction error between incoming image and outgoing image for producing exactly the same reconstructed picture as those in the front encoder to ensure QoS.

Regarding claim 11, Lin discloses in figures 2 and 3 wherein the difference in video quality is based upon pixel measurements.

Regarding claim 12, Lin discloses in paragraph 0051wherein the difference in video quality is a means square difference.

Regarding claim 13, Line discloses in figures 8A, 8B and paragraph 0036 wherein difference in video quality is based upon a signal-to-noise ratio.

Response to Arguments

5. Applicant's election with traverse of Groups I-IV in the reply filed on 12/19/05 is acknowledged. The traversal is on the ground(s) that the inventions of Groups I-IV relate to evaluating statistical remultiplexer performance. This is not found persuasive because even through Groups I-IV relate to statistical remultiplexer, the evaluating the statistical remultiplexer performance for Group I involves a separate utility of performances from that of Groups II, III, and IV. Group II is drawn to a separate utility of synchronizing by calculating difference of the reference clock time of input compressed bit stream channel and the reference clock time of the output compressed bit stream channel. Group III is drawn to a separate utility of determining the

amount of null packets present in at least a portion of an output compressed bit stream. Group III is drawn to queuing arrangement by determining one or more levels of data present in the decoder buffer model at different subsequent times within a time interval. Requirement is still deemed proper and is therefore made FINAL.

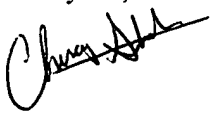
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G. Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 8:30-5:00.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
January 13, 2006



Chirag Shah
Patent Examiner AU 2664